

I CLAIM:

1. a method for measuring the DNA-structure specific binding activity of a test protein comprising the steps of:

- a) Contacting a nucleic acid substrate comprising a specific structure immobilized on a solid support with a test protein or mixture of proteins
- b) detecting the protein or mixture of proteins from step (a) bound to the immobilized nucleic acid substrate.

2. The method according to claim 1, wherein the solid support is a microtiter plate.

3. The method according to claim 1, wherein the immobilized nucleic acid substrate comprises DNA.

4. The method according to claim 3, wherein the DNA is damaged.

5. The method according to claim 1, wherein the nucleic acid structure comprises DNA ends.

6. The method according to claim 4, wherein the damaged DNA comprises UV- irradiated DNA.

7. The method according to claim 1, wherein the test protein comprises a cell extract.

8. The method according to claim 1, wherein the test protein comprises a DNA repair protein.

9. The method according to claim 1, wherein the DSSBP is detected by contacting the solid support of step (b) with an antibody.

10. The method according to claim 9, wherein said antibody comprises an anti-DNA-PK antibody.

11. The method according to claim 8, wherein the DNA repair protein comprises DNA-PK.

12. A method for measuring the DSSBP modulating ability of a test substance comprising the steps of:

- a) Contacting a nucleic acid substrate immobilized on a solid support with a test substance to produce a reaction premix
- b) Contacting the reaction premix of step (a) with a DSSBP capable of binding the immobilized substrate to produce a reaction mix

13. The method of claim 12, wherein the reaction mix is further subjected to a process whereby the DSSBP is detected.

14. The method according to claim 12, wherein the solid support is a microtiter plate.

15. The method according to claim 12, wherein the immobilized nucleic acid substrate comprises DNA.

16. The method according to claim 15, wherein the DNA is damaged.

17. The method according to claim 12, wherein the nucleic acid structure comprises DNA ends.

18. The method according to claim 16, wherein the damaged DNA comprises UV- irradiated DNA.

19. The method according to claim 12, wherein the DSSBP comprises a DNA repair protein.

20. The method according to claim 13, wherein the DSSBP is detected by contacting the solid support with an antibody.

21. The method according to claim 20, wherein said antibody comprises an anti-DNA-PK antibody.

22. The method according to claim 9, wherein the DNA repair protein comprises DNA-PK.